JUN -- 09/750,221
Client/Matter: 082123-0275721

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-5. (Canceled)

6. (Currently amended) An apparatus, for use with an image sensor having an array of pixels each of which outputs digital image data corresponding to one or more characteristics of light incident thereon, for detecting and compensating for a defective pixel, ~~which comprises~~ comprising

a defective pixel detection circuit constructed and arranged to determine whether a target pixel is defective based on a check condition~~, the condition being that image data of the target pixel has a value larger than a first coefficient representing a maximum value of image data of adjacent normal pixels or a value smaller than a second coefficient representing a minimum value of image data of adjacent normal pixels~~; and

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a compensation circuit constructed and arranged to compensate the image data of a target pixel deemed to be defective and output compensated image data, ~~in response to the image data of the target pixel, the maximum value of image data of adjacent normal pixels, the minimum value of image data of the adjacent normal pixels, a defective pixel determination signal representing that the target pixel is defective, and a minimum or maximum range violation signals representing that the image data of the defective pixel violates the maximum or minimum ranges in the check condition, which are provided thereto from the defective pixel detection circuit~~ wherein the defective pixel detection circuit includes:

a two-dimension space filter for receiving the image data fed thereto from a second line memory, the image data inputted into the second line memory from a first line memory, the image data provided to the first line memory from each pixel on a line-by-line basis, and

respectively storing each of the digital image data in a first set of lines, a second set of lines, and a third set of lines.

7. (Currently amended) An apparatus according to claim 6, wherein the defective pixel detection circuit ~~includes~~ further comprises:

~~a first line memory for storing therein the image data fed thereto from the unit pixel on a line-by-line basis~~

~~a second line memory for receiving the image data stored in the first line memory and storing the same therein;~~

~~a two dimensional space filter for receiving the image data fed thereto from the second line memory, the image data inputted thereto from the first line memory and the image data provided thereto from the unit pixel, and storing each of the image data in a first set of lines, a second set of lines, and a third set of lines, respectively; and~~

a defective pixel determination circuit constructed and arranged to receive the image data provided thereto from the space filter, determine whether or not image data of a target pixel is defective based on the check condition, and output a defective pixel determination signal, a minimum range violation signal and a maximum range violation signal according to determined results, wherein the defective pixel determination signal represents that the image data of the target pixel has a value larger than ~~the~~ a first coefficient ~~of the~~ times a maximum value of image data of adjacent normal pixels in the space filter, or a value smaller than ~~the~~ a second coefficient ~~of the~~ times a minimum value of image data of adjacent normal pixels in the space filter, the maximum range violation signal representing that the image data of the target pixel has a value larger than the first coefficient times the maximum value; and the minimum range violation signal representing that the image data of the target pixel has a value smaller than the second coefficient times the minimum value.

8. (Currently amended) An apparatus according to claim 7, wherein the defective pixel compensation circuit includes:

combining logic constructed and arranged to combine the minimum range violation signal and the maximum range violation signal provided thereto from the defective pixel detection ~~means~~ circuit;

a first selector constructed and arranged to selectively output the minimum value of image data or the maximum value of image data in response to output from the combining logic; and

a second selector constructed and arranged to select one of the output signals from the first selector and the image data of the target pixel, in response to the defective pixel determination signal from the defective pixel determination circuit, and output the same as the compensated image data, wherein

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if the image data of the target pixel has a value larger than the first coefficient ~~of~~ times the maximum image data and is determined as the defective pixel, the maximum ~~image~~ value of image data is outputted as the compensated image data; and

if the image data of the target pixel has a value smaller than the second coefficient ~~of~~ times the minimum image data and is determined as the defective pixel, the minimum ~~image~~ value of image data is outputted as the compensated image data.

9. (Original) An apparatus according to claim 8, wherein the first and the second coefficients are selected based on process characteristics of the image sensor.

10. (Original) An apparatus according to claim 8, wherein the first and the second coefficients are 1.1 and 0.9, respectively.

11. (New) An apparatus according to claim 6, wherein the two-dimension sapce filter is 3x3.

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12. (New) An apparatus according to claim 8, wherein the defective pixel determination signal represents that the target pixel is defective and the minimum and maximum range violation signals represent that the image data of the target pixel violates the minimum and maximum ranges in the check condition respectively, which are provided thereto from the defective pixel defection circuit.